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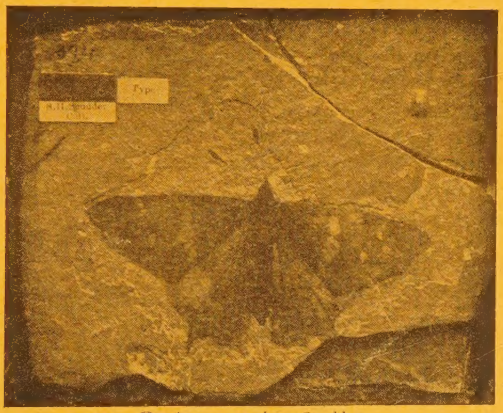

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ATHERIX BRAUNSI NOV. SP., A SOUTH AFRICAN LEPTID WITH GREGARIOUS HABITS (DIPTERA).

By J. Bequaert,

American Museum of Natural History, New York City.

The genus *Atherix* is unique among the Leptidæ on account of the remarkable, gregarious habits exhibited by the adults of certain, if not all, of its members. These have been repeatedly described for the Ibis fly, *Atherix ibis* (Fabricius), the commonest of the European species. "The female of this fly," says Walker,[1] "is gregarious, and attaches its eggs in large clusters to boughs hanging over streams, and there remains, and shortly dies. The cluster is generally pear-shaped, and sometimes contains many thousands of dead flies, and continually receives accessions by new comers settling upon it. When the larva is hatched it falls into the water, its future residence; it has a forked tail about one-third the length of the body, and has the power of raising itself in the water by an incessant undulating motion in a vertical plane."[2]

I am not aware that similar observations have been made on other European species, nor that the metamorphoses of any of these have ever been elucidated. In North America, however, *A. variegata* Walker, a close ally of *A. ibis,* also oviposits in dense clusters.

[1] Walker, F. Insecta Britannica. Diptera. Vol. 1, 1851, p. 70.

[2] D. Sharp (The Cambridge Natural History, Insects, Vol. 2, 1909, p. 480. fig. 227) has given a good figure of the egg and fly clusters of **A. ibis.** Of the many naturalists who have observed the habits of this fly I may mention the following:

Egger, J. Verh. Zool. Bot. Ges. Wien, 4, 1854, p. 7.

Schiner, J. R. Fauna Austriaca, Die Fliegen. Vol. 1, 1862, pp. 177-178.

Chapman, A. Masses of Diptera collected on twigs of alder. Ent. Mo. Mag., 3, 1866, pp. 94-95.

Tournier, H. and Preudhomme de Borre, A. Ann. Soc. Ent. Belgique, 17, 1874, C. R., pp. lxxxix-xci.

Pérez, J. Actes Soc. Linn. Bordeaux, 32, 1878, C. R., p. xliii.

Billups, T. R. Note upon **Atherix Ibis,** Fabricius. Entomologist, 22, 1889, pp. 193-194, Pl. 7; also mentions and figures parasitic Hymenoptera obtained from the egg cluster; W. H. Ashmead (p. 290) and F. W. Frohawk (pp. 290-291) comment further on these parasites.

Giard, A. Note sur la larve de **l'Atherix Ibis** Fabr. Bull. Soc. Ent. France, 1902, pp. 220-222.

Ives[1] describes "a dried-up mass of dead flies, about the size of a man's fist. Throughout it were scattered light-colored fragments, which had somewhat the appearance of empty egg-cases. The whole mass was very brittle, and readily crumbled to pieces. It was obtained (at Pemberton, N. J.) from the under surface of a trunk overhanging a small stream." The flies were recognized by Williston as females of a species belonging to the genus *Atherix,* probably to *Atherix variegata.*[2] In referring to Ives' observations, C. V. Riley and L. O. Howard[3] add the following remarks: "Some thirteen years ago we collected a large number of these eggs (of *Atherix*) upon the piling of Lake Minnetonka, near Minneapolis, and they have formed an interesting part of the Dipterological collection of the National Museum, while more recently we received a bit of piling from the shores of Lake Ontario which were covered with these eggs, from which larvæ hatched which we were able to determine as belonging to this genus by comparison with the figures in Dr. Brauer's Monograph of Dipterous Larvæ. Our correspondent stated that wharf piles for hundreds of feet were covered with these eggs."

I am much indebted to Mr. Geo. P. Engelhardt, of the Brooklyn Institute of Arts and Sciences, for the following notes on *Atherix variegata,* which he observed first at Beaver Creek, Beaver County, Utah, in July, 1904:[4] "The flies were present by thousands in dense clusters attached to the under side of logs and tree trunks a few inches above the water of Beaver Creek, a turbulent mountain stream well stocked with mountain trout. By far the greater part of the flies in the cluster were dead, only a few on the outside being alive. The altitude was about 7,000 feet." Mr. Engelhardt further writes me that "on June 10, 1920, while wading the Carman River, at Yaphank, Long Island, N. Y., a large cluster of leptid flies was observed under about the same conditions as in

[1] Ives, J. E. An interesting method of egg deposition. Ent. News, 1, 1890, p. 39.

[2] **Atherix variegata** Walker occurs in New Jersey. I have seen a number of female specimens of this species in the collections of the American Museum of Natural History, New York; they were taken by Mr. A. J. Weidt, at Singac, N. J., in July. It is not included in J. B. Smith's List of New Jersey Insects (1910).

[3] The eggs of **Atherix.** Insect Life, 2, Nos. 11-12, 1890, pp. 386-387.

[4] Some of the specimens collected on that occasion are preserved in the entomological collections of the Brooklyn Institute, where I have been able to examine them through the kindness of Mr. Chas. S. Schaeffer.

Beaver Creek, Utah. The time was late afternoon and all the flies were dead." Though, in this last instance, no specimens were collected, this observation most probably also refers to *A. variegata.*

The gregarious habit of the western *Atherix* has also been observed in Utah and Idaho by Aldrich, who gives an interesting account of the manner in which certain California Indians collect and prepare the masses of these flies for food.[1] The American Museum of Natural History possesses additional specimens of *Atherix variegata* obtained by Dr. F. E. Lutz at Pagosa Springs, Colorado (7,200 ft.), June 22 to 24, 1919, and on the Green River, Wyoming (6,100 ft.), July 2, 1920.

It is indeed well worthy of notice that the same gregarious behavior of the adult flies has now been noted in one of the African species, which I have named *Atherix braunsi,* in honor of its discoverer. There is thus reason to suppose that this curious and thus-far mysterious habit will eventually be observed in many other, if not all, members of the genus. In a recent letter, Dr. H. Brauns, of Willowmore, describes the habits of *A. braunsi* as follows: "This fly is of peculiar interest. It is at home along the margin of swiftly running brooks near Cape Town. One finds females and males of it on stones that emerge above the water (the female is smaller and black), bunched together in masses as large as a man's head; every moment pieces the size of a fist break away from the mass and, as soon as they drop in the water, are greedily eaten by the trout with which the streams have been stocked."

Atherix braunsi sp. nov.

Male. Length 6 mm. Wing, length 7 mm., width 2.4 mm.

Head (Fig 1*a*) broadly elliptical, as wide as the thorax; one and one-third times as wide as high when seen in front; hemispherical in profile. Inner orbits gradually divergent from the vertex to the side-checks. Front very broad; at its narrowest part, the vertex, about half the width of one eye; at the antennæ nearly half the width of the head. Face short, only half as long as the front, obliquely receding below; the antennæ inserted on the lower third of the head. Epistoma with a deep depression below each of the

[1] Aldrich, J. M. Flies of the Leptid genus **Atherix** used as food by California Indians. Ent. News, 23, 1912, pp. 159-163.

antennal sockets, slightly raised on the middle line. Posterior orbits moderately broad, gradually narrowed toward the vertex. Ocelli placed in an equilateral triangle, on a slightly raised tubercle which is widely removed from the inner orbits. Proboscis large and thick, slightly shorter than the head; with broad and long labella which are obtusely pointed at the apex. Palpi comparatively short and thick, barely one-third the length of the proboscis. Eyes bare, with all the facets approximately equal in size. Antennæ about as long as the face, of the usual shape in the genus (very much like the drawing of the male antennæ of *A. ibis* in Verrall, British Flies, Vol. 5, 1909, p. 242, fig. 171); the two basal joints almost of equal length; the third a little longer, of swollen kidney-shape; arista slender, about one and one-half times the length of the antennæ, bare. Thorax and scutellum of the usual shape.

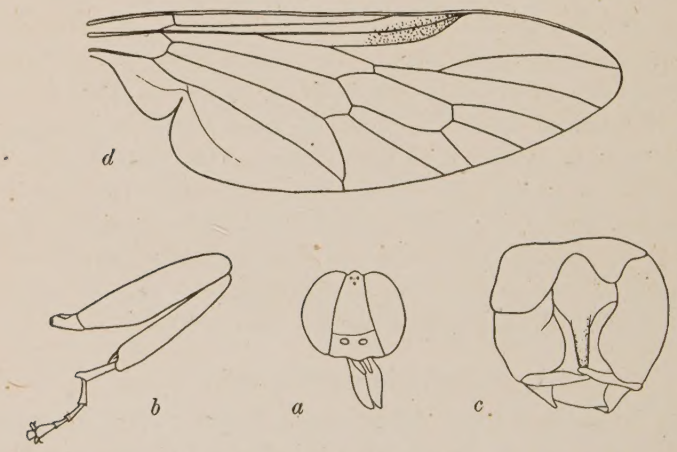

Fig. 1. **Atherix braunsi** sp. nov. Male: a, head seen in front; b, hind leg; c, hypopygium from above; d, wing. All X 10.

Legs comparatively long and thick. Femora distinctly swollen and feebly flattened, especially those of the middle and hind legs. Fore and middle tibiæ feebly broadened, much narrower than their femora; the hind tibiæ heavier, but a little narrower than their femora; fore tibiæ without, middle and hind tibiæ with two spurs. Fore tarsi slender, slightly longer than their tibiæ; their basal joint cylindrical, not thickened, about as long as the following four

joints together. Middle tarsi distinctly shorter than their tibiæ; their basal joint about the length of the following three together and with a feebly projecting, obtuse, apical expansion on the under side. Hind tasi slightly shorter than their tibiæ; their basal joint very short, but a little longer than the following joint; this basal joint is slightly thickened, cylindrical, and ends at the apex in a heavy, broadly obtuse, spur-like expansion which extends on the under side considerably beyond the insertion of the second tarsal joint (Fig. 1*b*). Pulvilli and claws of the normal shape, even on the fore legs, not distorted as in the male of *A. ibis*. Abdomen short and broad, but a little longer than the thorax. Hypopygium large, completely exserted; both parts of the forceps elliptical, thick, with a simple, finger-like apical appendage which is folded inward to cover the apex of the penis (Fig. 1*c*). Wing venation (Fig. 1*d*) as in other members of the genus; the third longitudinal vein forked much before the apex of the discal cell, its basal petiole not half the length of the two branches; anal cell closed far from the margin of the wing.

Head and thorax dull dark brown (nearest "mummy brown" of Ridgway's color nomenclature); the antennæ, epistoma and mouth parts pale yellowish; the posterior half of the scutellum dirty ocher yellow. Abdomen, including the hypopygium, uniformly bright ocher yellow. Legs dirty yellow, the coxæ and tips of tarsal joints slightly infuscate; the spur-like processes of basal joints of hind tarsi blackish. Halteres white, with a faint yellowish tinge. Wings hyaline, somewhat milky white, with a feebly marked, pale brown stigma which extends between the first and second longitudinal veins, from slightly before the anterior cross-vein to the apex of the first vein; wings otherwise entirely without spots or bands.

Pubescence concolorous, short but rather abundant on head and thorax; covering the entire vertex, front and side cheeks; face around the antennal sockets and epistoma bare. Hairs much longer and denser on the abdomen, bright yellow with a slight golden suffusion. Upper side of the femora with long, pale pubescence; the hairs of the legs otherwise short and black. No tactile hairs on the fore tarsi; but on the fore femora an irregular, transverse row of five long, pale colored bristles, which are placed before the

middle at the lower edge and are directed obliquely towards the apex of the femur; these bristles are in all probability tactile hairs.

Described from two males taken by Dr. H. Brauns at Stellenbosch, Cape Province, South Africa, November, 1915.

According to Dr. H. Brauns, females, seen at the same place and under the same conditions, therefore evidently of the same species, were smaller and black. I have not seen examples of that sex.

The salient characters of *A. braunsi* are found in the broad front of the male, the spur-like apex of the hind metatarsus, the unicolorous ocher yellow abdomen, and the milky white, unspotted wings. By these characters it differs conspicuously from all other described species and can easily be distinguished from the two previously known in the Ethopian Region: *Atherix binominata* J. Bequaert (= *Atherix longipes* Lœw, *nec* Bellardi)[1] from Bloemfontein, Orange River Colony; and *A. disciclara* Speiser,[2] from Tiko, near Victoria, Kamerun. Lœw campares *A. binominata* with *A. crassipes* Meigen, but that species has been made the type of *Atrichops* Verrall[3] on account of the front in the male and the side-cheeks in both sexes being practically bare. Whether *A. binominata* agrees in this respect with *A. crassipes* seems extremely doubtful; but *A. braunsi* has the front densely hairy from the ocelli to a short distance above the antennæ and the side-cheeks also are pubescent.

The genus *Atherix* Meigen (including *Atrichops* Verrall) is known from all over the world with the exception of South America. Of the thirty-one described species two are doubtful, seven occur in the Palearctic Region, three in the Ethiopian, eleven

[1] **Atherix longipes** H. Loew, Wiener Ent. Monatschr., 7, 1863, p. 12. This specific name being preoccupied in the genus by **Atherix longipes** Bellardi (1861) of Mexico, I propose that Loew's South African species be called **Atherix binominata.**

For the convenience of South African entomologists Loew's brief description of **A. binominata** is reproduced here: " —Ex **Ather. crassipedis** affinibus. Fusco-nigra ,tertio antennarum articulo, scutelli margine abdomineque subfulvis, primo hujus segmento praeter marginem apicalem atro, segmento secundo maculis tribus atris ornato, segmentis tribus sequentibus atro-fasciatis, segmento sexto subtiliter atro-marginato; pedes longi, cum coxis fulvotestacei, tibiis tarsisque anterioribus tarsisque posticas praeter basim nigris, tibiis posticis tarsorumque posticorum basi fuscis; alae infuscatae, in disco subnebulosae, stigmate fusco, furca venae longitudinalis tertiae perlonga. Long. corp. 3¾ lin.—Long. al. 3¼ lin."

[2] Deutsch. Ent. Zeitschr., 1914, p. 3 ( ).

[3] British Flies. Vol. 5. Stratiomyidæ. 1909. p. 291.

in the Oriental, one in Australia, and seven in North and Central America. To these should be added three Oriental species of *Suragina* Walker, which, according to Bezzi,[1] is not generically distinct from *Atherix*. In addition, a number of fossil species have been described from Baltic amber (Lower Oligocene) and from the Miocene shales of Florissant, Colorado.[2]

As suggested by Knab,[3] it is by no means certain that all the species included at present in *Atherix* are congeneric. In this connection it is of considerable interest that the female of the Mexican *Atherix longipes* Bellardi has been reported as a fierce biter and blood-sucker, a habit unknown in the common European *A. ibis* and in the North American *A. variegata*.[4]

[1] Ann. Mus. Nat. Hungarici, 10, 1912, p. 445.
[2] Atrichops hesperius Cockerell, Canadian Entomologist, 46, 1914, p. 101.
[3] Proc. Ent. Soc. Washington, 14, 1912, pp. 186-187.
[4] Knab, F. Blood-sucking and supposedly blood-sucking Leptidæ. Proc. Ent. Soc. Washington, 14, 1912, pp. 108-110.

A NEW PTINID FOR NEW ENGLAND.

On November 3rd, Dr. J. Payson Clark of Boston brought to the Boston Society of Natural History a small beetle that he was frequently finding in his house. I could not name it at the time, but a few days later, Mr. H. C. Fall determined it as *Niptus hololeucus* Hald., a European species, the only previous record for North America being Montreal, Canada. Dr. Clark continued finding a few each week, and as late as December 27. In all, some thirty-five specimens were obtained.

C. W. Johnson.

SYMPETRUM CORRUPTUM IN MASSACHUSETTS.

On September 10, 1911, I took two males and one female of this dragonfly at the south end of Plum Island, Ipswich, Mass. This is, I believe, the first record of this species in Massachusetts. At the same time and place I also secured a female of *Tramea lacerata*, making the second record of that species for New England, the first having been taken at Chelsea Beach about fifty years ago, and the specimen being now in the collection of the Boston Society of Natural History. The first specimens referred to are in the Essex County collection of the Peabody Museum of Salem, Mass.

A. P. Morse.

DISTRIBUTIONAL NOTES ON HEMIPTERA, WITH THE DESCRIPTION OF A NEW GERRIS.[1]

By Roland F. Hussey, Forest Hills, Mass.

During the past three years I have collected Hemiptera in various parts of Michigan, and in the vicinity of Minneapolis and St. Paul, in Minnesota, and during this time several noteworthy captures have fallen to my lot. Some of these are reported below; records from Berrien County, in the extreme southwestern part of Michigan, have largely been omitted, however, in view of a forthcoming list of the Hemiptera taken there. I have also included here a few records, based on specimens in the collections of the Museum of Zoology of the University of Michigan, which yield important information as to the ranges of a few species. Inasmuch as the distribution of the various known species of Hemiptera in North America is as yet very imperfectly known, such records as these are of considerable value.

Published records of Hemiptera from Michigan are very few indeed—and the records from Minnesota are equally unsatisfactory. Occasional references to species which have been taken in Michigan are scattered among the reports of the proceedings of various entomological societies, but the only important list including non-aquatic forms which has appeared is that of Townsend,[2] who reported about eighty-five species from Constantine, St. Joseph County. Some of his records, however, must be regarded as doubtful: the species reported as *Neottiglossa sulcifrons* Stal is undoubtedly *N. undata* (Say), which he does not list; I have taken *Phymata erosa fasciata* Gray and *P. e. wolfi* Stal in southern Michigan, but I have seen nothing which could be considered *P. acutangula* Guérin, a Neotropical form which finds its way into Texas; the species listed as *Coriscus inscriptus* Kirby is probably one of the allied species of Nabis, possibly *N. roseipennis* Reuter. The Notonectæ of Townsend's list, reported as the Palaearctic

[1] Contribution from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 179.

[2] Hemiptera Collected in Southern Michigan. Proc. Ent. Soc. Wash., ii, pp. 52-56, 1891.

N. fabricii Fieber (= *glauca* Linné) and as *N. americana* Fabricius (= *indica* Linné), a species occurring in the southwestern United States and Mexico, can be identified only by examination of the specimens. The same is true of the single Corixid species listed, *Arctocorisa calva* (Say).

However, recent work in various parts of Michigan has added materially to our knowledge of the Hemipterous fauna of the state. Collections have been made in four localities in the lower peninsula, and in the western part of the upper peninsula, along the Wisconsin border. These studies will be reported separately in the near future.

Acknowledgements are due to Messrs. H. G. Barber, J. R. de la Torre Bueno, H. M. Parshley, and H. H. Knight for identification of several of the species listed below, and to Mr. F. M. Gaige of the Museum of Zoology of the University of Michigan for permission to include several records here.

Sciocoris microphthalmus Flor. This Pentatomid, which was first described in 1860 from the Baltic region, is widely distributed in the Palæarctic region, where it has been recorded from Europe, Russia, the Caucasus district, Siberia and China. It was first reported in America by Van Duzee in 1904, from Mt. Washington, New Hampshire, and it has since been recorded twice from Maine. Hart[3] lists it as occurring at Duluth, Minnesota, and in the "Lake Superior region." Stoner[4] has recently given an account of its capture at Douglas Lake, Cheboygan County, Michigan.

I have also taken this species at Douglas Lake, from roadside grasses in a lowland stand of arbor-vitæ, balsam fir, birch, and aspen; and, while I was at the University of Minnesota, Professor O. W. Oestlund very kindly gave me one of five specimens which he took in the vicinity of Minneapolis a number of years ago.

Very recently I have received from the Museum of Zoology of the University of Michigan a number of Hemiptera collected in North Dakota by Mr. T. H. Hubbell during the summer of 1920. Among these was a single specimen of *S. microphthalmus,* taken on the arid top of a butte in the Bad Lands near Amidon, Slope County, in the southwest corner of the state, August 21, 1920.

[3] The Pentatomoidea of Illinois. Bull. Ills. Nat. Hist. Surv., xiii, p. 175, 1919.
[4] Ent. News, xxxi, p. 141, May 1920.

It appears probable, therefore, that this is another of the holarctic species of Hemiptera, and that its range will some day be shown to extend entirely across the American continent, as it is already known to extend across Eurasia.

Ploiariola hirtipes Banks. A specimen of this Emesine was taken from a spider-web in a cottage on Lindsley Lake, Gogebic County, Michigan, July 20, 1919 (T. H. Hubbell). This species has been reported from a number of localities in New England, but this is the first record from the central part of the continent.

Sirthenea carinata (Fabricius). There is a single specimen in the Museum of the University of Michigan, collected near Ann Arbor, August 22, 1916 (F. M. Gaige). This species has recently been reported from Illinois by Malloch,[5] but without definite locality, and Osborn and Drake have recorded its occurrence in southern and central Ohio.

Atrachelus cinereus (Fabricius). During the summer of 1918 Mr. A. W. Andrews obtained two specimens of this little Reduviid near Detroit, Michigan (July 4, August 4). This species was previously known only from the southern and southeastern part of the United States.

Pagasa pallipes Stal. This Nabid, originally described from Texas, has since been reported from Kansas and Utah. On August 14, 1918, I took a single specimen at Ingleside, Cheboygan County, near the tip of the lower peninsula of Michigan. This individual lacks the obsolete pale marking on the anterior margin of the pronotum, but otherwise it agrees perfectly with the description given by Reuter and Poppius.[6]

Sericophanes heidemanni Poppius (= *noctuans* Knight). One specimen of this pretty little Mirid came to my light at Minneapolis, Minnesota, June 13, 1920. This record extends the known range of this form far to the westward. I am indebted to Dr. Knight for identification of this form.

Gerris argenticollis Parshley. This species is distributed over the eastern part of North America, from the Atlantic seaboard west at least to Michigan and Indiana. I have taken specimens in Michigan at Ann Arbor (April 19, 1919), and in the extreme

[5] Ent. News, xxxi, p. 240, Oct. 1920.
[6] Acta Soc. Sci. Fenn., ix, p. 29, 1909.

southwestern part of the state, near Three Oaks (June to September). These were all taken from woodland pools, or from the slow-flowing stretches of the Galien River in dense woods.

Gerris alacris, sp. nov. (Fig. 1).

Facies of *G. marginatus* Say, a little smaller than that species, females larger and more robust than the males; commonly brachypterous. Males readily distinguished from the other North American species by the prominent omphalium of the metasternum; female easily distinguished from *G. marginatus* by the shorter spines of the sixth abdominal segment, which only slightly surpass the middle of the first genital segment.

Black above, the pronotum and the veins of the hemielytra with fine sparse golden pubescence, anterior lobe of the pronotum with a yellow median line, two small oblique yellowish marks on the base of the vertex. Bucculæ yellow, throat slate-gray; prosternum yellow, the coxal cavities with a black spot outside. Mesosternum blackish, often yellow posteriorly, commonly with two diverging yellow lines extending backward from between the anterior coxæ. Metasternum and venter yellowish, median line obsoletely carinate, the sides of the abdomen below and the region about the metasternal orifice (omphalium Bergroth 1902) blackish. The color of the ventral surface is variable: sometimes it is entirely black. Connexivum narrowly yellow outside.

Antennæ dark testaceous, first and second joints with a narrow piceous apical ring, middle of the first joint darker; apical half of the third and the entire fourth joint piceous. Relative lengths of the segments, 43:21:20:30 (average of 15 specimens). These ratios vary within narrow limits: sometimes the third segment is very slightly longer than the second, and sometimes the first is slightly shorter than the second and third together.

Legs colored as in *marginatus,* the middle and hind legs slightly longer than in that species. In the brachypterous form the hemielytra commonly reach to about the middle of the third abdominal segment.

Male: sinus of the sixth ventral segment similar to that of *marginatus,* but with the sides of the median emargination somewhat more parallel. Female: genital segment broad at the base,

more narrowed apically than in *marginatus;* the spines of the sixth ventral segment rather blunt, barely surpassing the middle of the genital segment.

Length, ♂, 7-8 mm., ♀, 9-10 mm.; greatest width (across the middle coxæ), ♂, 2.1–2.3 mm., ♀, 2.7–2.9 mm.

Holotype, macropterous ♂, allotype, machopterous ♀, in coll. Museum of Zoology, University of Michigan. Paratypes, 12 ♂ ♂ and 18 ♀ ♀, macropterous and brachypterous, in coll. University of Michigan Museum and R. F. Hussey.

Described from 32 specimens taken from a small pond at the foot of a sand dune on the shore of Lake Michigan near Sawyer,

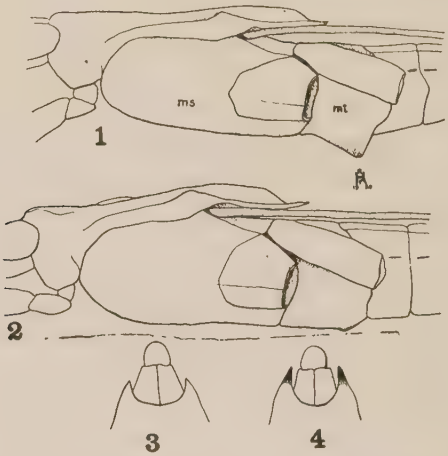

Fig. 1. 1. Thorax of **Gerris alacris**, n. sp., from left side. 2. Thorax of **G. marginatus** Say. 3. **Gerris alacris**, sp. nov., female genital segments, ventral aspect. 4. **G. marginatus** Say, female genital segments.

Berrien County, Mich., July 19 and July 26, 1920 (R. F. Hussey). This species was by far the most common water-strider here, and both adults and nymphs were seen. In company with it were *G. marginatus* and a few specimens of *G. rufoscutellatus.*

Tenagogonus hesione Kirkaldy. One adult and three nymphs of this water-strider were secured by Miss E. P. Butler at Vicksburg, Kalamazoo County, Michigan, August 21, 1920. The previous North American records were from Florida and Ohio.

Microvelia circumcincta Champion. The University of Michigan

Museum has one specimen of this species, taken at Fort Davis, Texas, during the summer of 1914 (M. M. Sampson). This Mexican Veliid is a new addition to the Hemipterous fauna of the United States.

Microvelia buenoi Drake. This little water-strider, recently described[7] from the Adirondack Mountains, was taken on a small woodland pool near Three Oaks, Michigan, July 4, 1919; and I also found it common at Minneapolis and St. Paul during May and June, 1920. I have compared these specimens with a paratype kindly given me by Professor Drake, and can find no significant differences.

Microvelia fontinalis Bueno. I have taken this species in Michigan at Ann Arbor (June 10, 1919), from a small pool in a roadside ditch below a spring, and in Berrien County (July, 1919).

Merragata foveata Drake. Apparently generally distributed over the United States east of the Rocky Mountains. I have taken it in Michigan; and I found several specimens at Minneapolis, Minnesota, on November 19, 1918—a cold, bleak day, when no other surface-dwelling Hemiptera were to be found.

Merragata brunnea Drake. The range of this species extends from Florida to New England, and west at least to Minnesota. I have taken specimens at St. Paul (Nov. 11, 1918), in Berrien and Washtenaw Counties, Michigan, and Miss Butler found it abundant at Battle Creek, Michigan, in August, 1920.

Ranatra protensa Montandon. This species has been much confused with the other two species of Ranatra which occur in northeastern North America. Its range extends from the Atlantic coast west at least to Minnesota. My Michigan specimens are from Washtenaw and Calhoun Counties, and I have seen it from St. Paul and from Cass County in Minnesota. The forms which I reported as this species from Douglas Lake[8] are *R. americana edentula* Montandon.

The present species, as I distinguish it, can be separated from *R. kirkaldyi* Bueno by its somewhat larger size, its more slender form, and its long and very slender fore femora, which are unbanded; it is smaller than most specimens of *R. americana* Mon-

[7] Bull. Brookl. Ent. Soc., xv, p. 20, 1920.
[8] Occ. Papers Mus. Zool. Univ. Mich., No. 75, p. 19, 1919.

tandon, the fore femora are more slender and have no trace of the subapical notch commonly present in that species, and the pronotum is more distinctly carinate on the posterior part of the anterior lobe. The hind legs of *protensa* are longer than in either of the other species, reaching to the tip of the air-tube, the femora reaching to the apices of the hemielytra, whereas in *americana* the legs reach only to about the middle of the air-tube and the hind femora only to the penultimate segment of the abdomen; the hind legs of *kirkaldyi* slightly surpass the middle of the tube.

R. americana is easily the most abundant species of the genus in Michigan and in Minnesota; *R. kirkaldyi* is much less generally distributed, but is sometimes locally common, especially in waters containing a relatively high content of calcium salts in solution; and *R. protensa* is the least common of the three species.

Palmacorixa buenoi Abbott. This is a common Corixid in the Atlantic states, but has not hitherto been reported west of Ithaca, N. Y. During August, 1920, I took two specimens at Ann Arbor, Michigan, from among waterweeds in the Huron River.

Palmacorixa gillettei Abbott. During June and September, 1919, I found this Corixid abundant in the Galien River a few miles north of Three Oaks, Michigan. The species was previously reported only from Colorado.

Corixa verticalis (Fieber). The range of this species extends from the Atlantic coast west at least to Missouri. I found it abundant in the Galien River in June, in company with *P. gillettei,* but it was not taken here in September. In Mr. Bueno's collection there are two specimens from Creve Cœur Lake, Missouri, labelled *Arctocorisa calva* (Say) by Professor Abbott.

In his description of *Palmacorixa gillettei* Professor Abbott says,[9] "Superficially it resembles *calva* Say." I believe that the *calva* to which Professor Abbott compares his new species is certainly *Corixa verticalis*—especially since I have seen the specimens referred to above—since this species does have a superficial resemblance to *P. gillettei,* whereas the true *calva* is a very different insect.

Corixa macroceps (Kirkaldy). This species was described from

[9] Ent. News, xxiii, p. 339, 1912.

North Carolina, and was subsequently reported by Abbott from Georgia. Mr. Bueno has a number of specimens taken in the vicinity of New York, and Miss E. P. Butler found it abundant in a small pond near Battle Creek, Michigan, in August, 1920.

Callicorixa praeusta (Fieber). This holarctic species has several times been reported from the northern parts of America, but the only record from the United States is that of Parshley from Maine. I have seen two specimens from the Pacific coast states, one from Lake Cushman, Washington, July 3, 1919 (F. M. Gaige), in the Museum of the University of Michigan, the other from San Francisco, in Mr. Bueno's collection.

The three females which I reported from northern Michigan[10] as "probably *C. kollarii* Fieber," should in all probability be placed in *præusta*. I seriously question the northern records of *kollarii*, which was originally described from Cuba and from Brazil.

[10] Occ. Papers Mus. Zool. Univ. Mich., No. 75, p. 21, 1919.

OKANAGANA RIMOSA (SAY) IN NOVA SCOTIA.

During the past summer (1920), Mr. David H. Linder, while botanizing in southern Nova Scotia, found this little Cicada at several places. In a letter he says: "It appeared to be quite common, especially in dry clearings where white birch and maple is found. About a mile north of Meteghan they were quite common in a dry clearing that had grown up to white birch and were almost numerous enough to be called a swarm. At Argyle, though not quite so thick, they were nevertheless quite common, as was also the case at Barrington, where I captured the specimen." Mteghan and Barrington are about fifty miles apart, while Argyle is nearly midway between the two places. In Nova Scotia, Mr. W. T. Davis (Journ. N. Y. Ent. Soc., 1919, vol. 27, p. 205) records it only from Truro.

C. W. Johnson.

PROFESSOR EMERY'S SUBGENERA OF THE GENUS CAMPONOTUS MAYR.

By William Morton Wheeler,
Bussey Institution, Harvard University.

The great cosmopolitan ant-genus *Camponotus,* now comprising fully 500 species and as many subspecies and varieties, has become so unwieldy that subdivision has become imperative. As long ago as 1896 Emery[1] made a serious attempt to render it more manageable by dividing it into three cohorts (Arcuati, Capitati and Angulosi) and numerous maniples based for the most part on geographical groups of species. Forel finally grasped the nettle in 1912[2] and established 16 subgenera in addition to *Colobopsis* Mayr, which had long been accorded subgeneric rank. Although he cited species under each subgenus he failed to designate any subgenotypes. I undertook to supply this omission in 1913.[3] In 1914 he issued a more extensive account of his subgenera,[4] increased their number to 24, and appended an extensive list of the known species. In this paper he cited a type for each subgenus but paid no attention to my designations. It happened, however, that in all but eight of the subgenera we had selected the same species. Now Emery[5] has issued a most painstaking study of the genus and has increased the number of subgenera to 34, excluding the monotypic *Phasmomyrmex* Stitz, which he has elevated to generic rank. He has also established a new genus, *Notostigma,* for three Australian species (*carazzii, foreli* and *podenzanai*), two of which were formerly included by Forel in his subgenus *Myrmosphincta.* The outlines of the various subgenera have been more accurately defined, much use has been made of the geographical distribution of the species, and the characters of the male *Camponoti,* which

[1] Saggio di un Catalogo Sistematico dei Generi Camponotus, Polyrhachis e Affini. Mem. R. Accad. Sc. Ist. Bologna (5) 5, 1896, pp. 761-780.

[2] Formicides Néotropiques Part VI, Mém. Soc. Ent. Belg. 20, 1912, pp. 59-92.

[3] Corrections and Additions to "List of Type Species of the Genera and Subgenera of Formicidae," Ann. N. Y. Acad. Sc. 23, 1913, pp. 77-83.

[4] Le Genre Camponotus Mayr et les Genres Voisins. Rev. Suisse Zool. 22, 1914, pp. 257-276.

[5] Le Genre "Camponotus" Mayr, Nouvel Essai de sa Subdivision en Sous-Genres. Rev. Zool. Africaine 8, 1920, pp. 229-260, 1 fig.

no one had seen fit to study heretofore, have been scrutinized. In Emery's classification only five of the subgenera are represented in both hemispheres, whereas 11 include only New World, and 19 only Old World species. Unfortunately, a certain amount of confusion has been introduced by Emery's overlooking my designations of the types of Forel's subgenera. It becomes necessary, therefore, to discuss very briefly the subgeneric names that are affected by this oversight. These are listed in the following paragraphs, together with the cases in which Forel's types are invalidated by my previous designations:

Subgenus *Camponotus* Mayr. When Mayr established the genus *Camponotus* in 1861, he designated no type but placed *Formica ligniperda* Latr., first on his list of species, just as he had placed it first in the genus *Formica* in his work on the Austrian ants (1855). Bingham, perhaps for that reason, selected *ligniperda* as the type of *Camponotus* in 1903, ignoring the fact that Forel and Emery had long regarded this ant as a mere sub-species of *herculeanus* L., which they therefore cite as the genotype. I am not aware that our codes make any provision for such cases.

Subgenus *Myrmothrix* Forel. I designated *Formica abdominalis* Fabr. as the type (1913), but Forel chose *F. rufipes* Fabr. (1914). Both are retained in the subgenus as accepted by Emery.

Subgenus *Myrmolophus* Emery. Emery has split this subgenus off of Forel's *Myrmepomis* and based it on the Neotropical *Formica sericeiventris* Guérin, leaving the remainder of the species, which are African and Malagasy, in *Myrmepomis*. I had designated *sericeiventris* as the type of *Myrmepomis* in 1913, and Forel had cited the Ethiopian *F. fulvopilosus* DeGeer as the type in 1914. As the latter designation is invalid, *Myrmolophus* becomes a synonym of *Myrmepomis*, and it is necessary to replace Emery's name for the Old World species. I propose the name **Myrmopiromis** nom. nov.

Subgenus *Myrmotarsus* Forel. I designated *Formica mistura* F. Smith as the type of this subgenus, whereas Forel selected *F. irritabilis* F. Smith. Both are included in the group as emended by Emery. He includes also *F. quadrisectus* F. Smith, which was cited by Forel as the type of *Myrmophyma*. Since I had previously designated *Camponotus capito* Mayr as the type of the latter genus,

and Forel's designation is invalid, there can be no objection to Emery's procedure.

Subgenus *Myrmosphincta* Forel. I designated the Neotropical *Formica sexguttata* Fabr. as the subgenotype, Forel the Malayan *F. cinerascens* Fabr. Emery has now transferred *sexguttata* to his subgenus *Myrmotemnus* and has retained the name *Myrmosphincta* for the Malayan, Australian and Malagasy species. It is clear that a new name is required for *Myrmosphincta* Emery (1920). I propose **Myrmosaulus** nom. nov.

Subgenus *Myrmophyma* Forel. As already stated, I designated *Camponotus capito* as the type, but Forel selected *quadrisectus.* Emery also designates *capito* as the type. Forel's *Myrmocamelus* becomes a synonym of *Myrmophyma,* because he selected as its type *Formica ephippium* F. Smith, which is merely one of a number of Australian species closely related to *capito.* Thus owing to my prior designation of the type of *Myrmophyma* it is unnecessary for Emery to violate the code of nomenclature (1912), according to which genotypes are stable and cannot be changed.

Subgenus *Myrmosaga* Forel. Here, too, there is a discrepancy in the types selected, as I had designated *Camponotus kelleri* Forel and Forel had selected *C. quadrimaculatus* Forel. Both are included in the subgenus as emended by Emery.

Subgenus *Myrmentoma* Forel. This subgenus, established by Forel in 1912, was in 1914 regarded by him as a synonym of Ashmead's *Orthonotomyrmex* (1906). I had designated *Formica lateralis* Olivier as the type of *Myrmentoma* in 1913, and Forel had designated the same type for *Orthonotomyrmex* in 1914, overlooking the fact that Ashmead had designated *Formica sericea* Fabr. Emery has resuscitated *Myrmentoma* and defined it and *Orthonotomyrmex* more precisely.

Subgenus *Myrmepomis* Forel. See *Myrmolophus,* above.

Subgenus *Myrmacantha* Emery. This is a synonym of *Myrmorhachis,* for in 1913 I designated as the sub-genotype of the latter the Ethiopian *Camponotus polyrhachioides* Forel, which is closely related to *C. aberrans* Mayr designated as the type. Forel in 1914 selected the Neotropical *Camponotus latangulus* Roger as the type of *Myrmorhachis.* Since Emery restricts the latter name to the American forms it becomes necessary to replace it by a new term.

I propose **Myrmocladœcus** nom nov., since all or nearly all the species live in hollow twigs.

Subgenus *Myrmamblys* Forel. Here, too, difficulties arise owing to the fact that Emery has restricted the name to American species, I designated an East Indian species, *Camponotus reticulatus* Roger as the type (1913), but Forel selected a Neotropical form, *C. fastigatus* Roger. As Emery has placed *reticulatus* in *Myrmotemnus,* the latter would seem to be a synonym of *Myrmamblys* Forel (1912 and 1913), and the selection of a new name for *Myrmamblys* Emery (1920) is made necessary. For this I propose **Neomyrmamblys** nom. nov. I have already explained why the small group of American species including *sexguttatus* must be retained as *Myrmosphincta* Forel (*vide supra*).

Subgenus *Myrmorhachis* Forel. Discussed above in connection with *Myrmacantha* Emery.

Subgenus *Myrmeurynota* Forel. I designated *Camponotus eurynotus* Forel as the type of this subgenus but Forel cites *C. gilviventris* Roger. Both are included in Emery's list of species.

Subgenus **Manniella** subgen. nov. I propose this name for the small group comprising the Cuban *sphaericus* Roger (subgenotype) and its subspecies *sphaeralis* Roger. Mann has recently discovered and described the maxima worker of these forms.[6] Both Forel and Emery include them in *Myrmeurynota,* whereas Mann assigns them to *Colobopsis.* The structure of the head, pronotum, etc., of the large worker is so aberrant that they cannot be included in these subgenera, nor in Emery's *Hypercolobopsis, Pseudocolobopsis* nor *Paracolobopsis.*

The changes suggested above increase the number of subgenera of *Camponotus* to 36.

[6] Additions to the Ant Fauna of the West Indies and Central America. Bull. Amer. Mus. Nat. Hist. 42, 1920, pp. 403-439, 10 figs.

A REVIEW OF THE AMERICAN SPECIES OF THE GENUS PALLOPTERA.

By Charles W. Johnson,
Boston Society of Natural History, Boston, Mass.

In a recent study of the species of Palloptera, including the type of *P. jucunda* Loew, in the Museum of Comparative Zoölogy, it seemed that some discrepancies existed that should be corrected. Prior to Dr. A. L. Melander's paper[1] no figures accompanied the original descriptions, and this may account for some of the errors. A comparison of the figure of the wing of *P. jucunda* by Melander with the type shows a marked difference (although the series of *P. jucunda* shows some variation) and is apt to be misleading, especially since there is a much larger species having practically the same wing pattern as that figured for *P. jucunda.* The wing figured as *P. jucunda* in Williston's Manual of North American Diptera, 3d edition, page 80, is *P. superba.* I have been unable to find an American species agreeing with the European *P. arcuata* Meig. It was determined by Coquillett and recorded from Mt. Washington, N. H., by Mrs. Annie T. Slosson, but none of the specimens I have collected there and at Mt. Desert, Me., agree with that species. Submitting a sketch of the wing of a specimen taken at Base Station, Mt. Washington, to Mrs. Slossom, she writes: "I have looked up the unique specimen of *P. arcuata.* It is in poor condition, abdomen missing, but wings perfect. They are exactly like your figure, clouded at the tip, not extending along the costa."

Table of Species.

1. Cross-veins not bordered with brown, auxillary and first vein, and apex of wing brownish; thorax grayish-pollinose. *terminalis* Loew.

   Only the posterior cross-vein and tip of the wing bordered with brown; thorax yellow (Fig. 1) ..... *subarcuata* sp. nov.

   Both of the cross-veins, tip of the wing, and costal margin partly or entirely bordered with brown 2

[1] Psyche, 1913, Vol. 20, p. 80, pl. 3, figs. 16-21.

2. Costal margin interrupted and the brown clouding of the anterior cross-vein not connected.....3
   Costal margin broad and continuous, covering the anterior cross-vein 4
3. First and auxillary veins brown only at the costa, leaving the base and middle of the costal margin hyaline; length 4 mm. (Fig. 2).....*jucunda* Loew
   First and auxillary veins included in the brown costal margin; first and basal half of the second costal cell yellow; length 7 mm. (Fig 3).....*albertensis* sp. nov.
4. Thorax and abdomen largely cinerous-pruinose; abdominal segments setose; four rows of acrosticals; wing pattern resembling *similis;* length 3.5 mm. .....*setosa* Mel.
   Thorax and abdomen shining yellow, brown of the posterior cross-vein not connected with the costal margin; abdominal segments narrowly margined with black, setæ small; length 6 mm. (Fig. 4).....*similis* Johns.
   Thorax and abdomen yellow, subshining; thorax with two pruinose subdorsal stripes; brown of the posterior cross-vein connected with the costal margin; abdominal segments with large marginal setæ, arising from black spots. .*superba* Lœw.

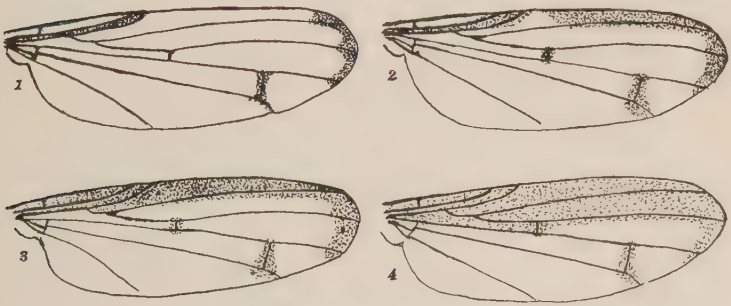

Fig. 1. Wings of Palloptera.

Palloptera subarcuata sp. nov. (Fig. 1).

P. arcuata Slosson, Ent. News, 1895, vol. 6, p. 7 (determined by Coquillett) and Johnson, Psyche, 1910, vol. 17, p. 233 (not Meigen).

Male. Front yellow opaque, vertical margin, frontal orbits, face

and lower half of the occiput whitish, ocellar triangle black, first and second joints of the antennæ yellow, third brownish, arista brown and pubescent. Thorax and scutellum yellow, shining, with fine brown hairs, one prominent dorso-central and four large marginal scutellar bristles. Abdomen yellow, third, fourth, and fifth segments brown. Legs including the coxæ light yellow, halteres yellow. Wings hyaline, first veins but slightly clouded, tip of wing and posterior cross-vein broadly clouded with brown. Length, male 4.5 mm., female, including ovipositor, 5 mm.

Seven specimens. Holotype, Bar Harbor, Me., Aug. 10, 1920 (C. W. J.). Allotype, Northeast Harbor, Me., July 1, 1909 (Dr. C. S. Minot), and two paratypes, Bar Harbor, Aug. 15, and Base Station, Mt. Washington, N. H., Aug. 15, 1916 (C. W. J.), in the collection of the Boston Society of Natural History. Paratypes are also in the Museum of Comparative Zoölogy, U. S. National Museum, Mrs. Slosson's and the author's collections.

Palloptera jucunda Loew (Fig. 2).

In addition to the type locality, Sitka, Alaska, and the localities recorded by Melander, I have specimens before me from Parroquet Island, Labrador, July 21, 1887 (S. Henshaw), Mus. Comp. Zoöl.; Midvale, Montana, Aug. 25 (C. E. Brown); Logan, Utah, Sept. 1915 (H. B. Hagan). Cranbrook, B. C., Sept. 12 (C. Garrett).

Palloptera albertensis sp. nov. (Fig. 3).

Front dark yellow, opaque, orbits, face and occiput light yellow, antennæ yellow (third joint wanting). Thorax and scutellum yellow, subshining, with macrochætæ similar to *P. jucunda*. Abdomen yellow, with a narrow black dorsal line expanding toward the top, ovipositor brown, forming about two-fifths the length of the entire abdomen. Legs and halteres yellow. Wings, near the end of the first vein and base of the costal margin, yellowish. Length, including the ovipostor, 7 mm.

One specimen, Calgary, Alberta, Canada, collected by Mr. Owen Bryant.

The larger size, black dorsal line on the abdomen, and heavier

markings on the wings, separate this from *P. jucunda.* The wing figured by Melander resembles this more than it does the typical *jucunda,* yet there are variations of the latter in which the wing markings approach this species. The brown costal margin has a spot of slightly lighter shade just beyond the tip of the first vein, scarcely noticeable to the naked eye. In *jucunda* this spot in the costal margin is usually much larger and hyaline.

Palloptera similis Johnson (Fig. 4).

Since describing this species from Fort Kent, Me. (Psyche, 1910, vol. 17, p. 233), I have taken it on the carriage road, Mt. Washington, N. H., at about 2,500 feet, July 24, 1915. The wing pattern resembles that of *P. setosa* Melander.

SPECIFIC NAMES REPEATED IN THE LINNEAN GENUS FORMICA.

By Carlo Emery,
Bologna, Italy.

My friend Mr. Donisthorpe published, nearly three years ago,[1] an article on a well-known list of ants from the environs of Nice, inserted by Leach in 1825 into the "Zoölogical Record." Mr. Donisthorpe has been no more successful than myself in solving the enigmas which, under the title of descriptions, were submitted by the old English author to his readers.

I should have had no occasion to revert to the matter had not Mr. Donisthorpe decided to replace the name *Formica picea* Nylander (1846) by *F. transkaukasica* Nassonow (1889), because the name *F. picea* Leach antedates *F. picea Nyl.*, and notwithstanding the fact that both insects, in our present nomenclature, have been placed in very different genera.

To be consistent, however, it would be necessary to change many other names, and, not to go beyond the list of Leach's names, also the following:

F. affinis Leach (1825), Myrmicinarum genus? and *F. affinis* Le Guillou (1841), *Polyrhachis,* have priority over *F. affinis* Schenck (1851), *Lasius.*

F. testaceipes Leach (1825), Myrmicinarum genus? has priority over *F. testaceipes* F. Smith, *Camponotus.*

There are, I believe, certain principles which should be applied only *cum grano salis, i. e.*, only when they are practical and useful, and should be abandoned when they merely create embarrassment and confusion. Such is the principle of priority in zoological nomenclature, which certain entomologists have pushed to most regrettable extremes.

For my part, I shall continue to designate *Formica picea* by the name which was applied to it by Nylander in 1846; *Lasius affinis* Schenck and *Camponotus testaceipes* F. Smith, by the names consecrated by the usage of more than half a century, and I count

[1] The Entom. Record, Vol. 30, p. 8-9 (1918).

on the assent of the majority of entomologists, at least in continental Europe.

I have carefully gone over the seventh volume of the "Catalogus Hymenopteronum" of Dalla Torre, in quest of names of the Linnean genus *Formica* which have been repeated, and have found the following interesting particulars:

F. longipes Latr. (1802), *Pheidole,* has priority over *F. longipes* Jerdon (1851), *Plagiolepis,* and *F. longipes* Gerstæcker (1858), *Camponotus.* Through my attribution of Latreille's species to the genus *Pheidole, Ph. longipes* Pergande will have to take the new name, *Ph. grallipes,* proposed by Wheeler.

F. pilosa Olivier (1791), synonym of *Camponotus fulvopilosus* De Geer, has priority over *F. pilosa* F. Smith (1857), *Camponotus* (*Colobopsis*) = *Colobopsis pubescens* Mayr (*nec* Fabricius) = *C.* (*Colobopsis*) *leonardi* Emery (1889). This species should take the latter name.

F. pallens Le Guillou (1841) = *Camponotus* sp., near *chloroticus* Emery, has priority over *F. pallens* Nylander (1849), *Camponotus.* The latter should take a new name. I propose *C. nylanderi.*

F. thoracica Olivier (1791), genus? has priority over *F. thoracica* Fabricius (1804), *Camponotus.* This case is identical with the homonymies of Leach's species and of subsequent authors, noted at the beginning of this article. I therefore propose that *C. thoracicus* Fabr. be retained.

Nearly the same state of affairs is encountered in the following cases:

F. abdominalis Latreille (1802), genus? Formicinarum seu Dolichoderinarum, and *F. abdominalis* Fabr. (1804), *Camponotus.*

F. badia Latreille (1802), *Pogonomyrmex,* and *F. badia* F. Smith (1857), *Camponotus.*

F. carinata Fabricius (1804), *Polyrhachis,* and *F. carinata* Brullé (1840), *Camponotus.*

F. erythrocephala Fabricius (1775), *Leptomyrmex,* and *F. erythrocephala* Christ, *Camponotus.*

F. fervens Drury (1782), *Atta,* and *F. fervens* F. Smith, *Camponotus.*

F. foetida Linne (1758), Olivier (1791), *Neoponera, F. foetida*

De Geer (1773), Myrmicinarum genus, and *F. foetida* Buckley (1866), *Forelius.*

F. incisa Schenck (1852), *Lasius,* and *F. incisa* F. Smith (1858), *Formica?*

F. nana Latreille (1802), *Pheidole, F. nana* Jerdon (1851) = *Tapinoma melanocephalum,* and *F. nana* F. Smith (1858), *Camponotus.*

F. nitida Razoumowsky (1789), genus? and *F. nitida* F. Smith (1858), *Camponotus.*

F. vagans Olivier (1791), *Eciton,* and *F. vagans* Jerdon (1851), *Prenolepsis.*

These examples will suffice, I believe, to prove the inadvisability of changing the names of these ants, merely because they were classed, at the time of the publication of their descriptions, in the Linnean genus *Formica,* though at the present time relegated to the most diverse genera and even to different subfamilies.

There are also other names which are repeated twice or several times by ancient authors in the genus *Formica,* but as they furnish material for no discussion of interest, I pass over them in silence.[1]

[1] For example:
F. bicolor Fabricius (1793), Latreille (1798), Leach (1825), Schilling (1858).
F. megacephala Fabricius (1793), Leach (1825), Losana (1834), etc., etc.

MONECPHORA BICINCTA (SAY) IN NEW ENGLAND.

By Albert P. Morse,
Wellesley College, Wellesley, Mass.

The black frog-hopper or spittle-bug, *Monecphora bicincta* var. *ignipecta* Fitch, is a common insect locally in New England (Wellesley,—A. P. M.; Dedham and Bridgewater, Mass., and Squam Lake, N. H.—Boston Soc. Nat. Hist.) and I have an example from Harrisburg, Pa. From southern New Jersey (*t.* C. W. Johnson) southward its place is taken by the typical banded form (*M. bicincta*), marked by several narrow transverse vermilion stripes, of which the two crossing the elytra are especially noticeable.

Van Duzee records the species (Cat. Hemipt., p. 509) from sixteen states (Mass. to Iowa, Fla., Tex., also Mex. and W. I.), but does not say which form is referred to.

During the past summer, while collecting orthoptera in Maine, I found the banded form at Norridgewock (Aug. 19) in the central western part of the state, and later took the unmarked variety at Naples, Norway, and several points between there and Norridgewock. Finding that the species was not reported by Prof. Osborn in his life-histories of the Cercopidæ of Maine, I paid more attention to it thereafter, and secured specimens at various additional points in southwestern Maine, including Gorham, Standish, Limington, Lyman, Sanford, Lebanon and Eliot. All were of the unmarked variety.

Why the banded form alone should be found at the Norridgewock locality, and only there (in New England), at the northern limit of the distribution of the species (as far as now known), is as yet an unsolved problem.

An examination of the material at the Museum of Comparative Zoology at Cambridge resulted in finding a single additional example from New England of the banded form, labeled, "Mass., S. Henshaw." Mr. Henshaw tells me that this was doubtless secured in Brookline, Mass., in the early period of his collecting.

So far as my memory recalls in the past, and certainly from

observations made this summer, this insect is associated with the bunch-grass (Andropogon scoparius) and feeds on its sap. This grass is often the dominant species on the sterile, gravelly soils of the coastal plain of New England and is widely distributed in the region inhabited by the insect. Adult insects were commonly observed (Aug. 19 to Sept. 18, 1920) perched upon the flowering stalks one to two feet from the ground. On one occasion the stalk was even plucked and the bug examined through a half-inch lens while still busily sucking, during which time, at irregular intervals (5 to 50 seconds) it discharged from its abdomen tiny droplets of a clear liquid.

Adults have been taken in New England from the last week in July till the latter part of September. They could not be found this year at Wellesley in mid-October, perhaps because the grass stems were then hard and dry. The young stages will probably be found, if looked for, in the leafy tufts that characterize the growth of this grass earlier in the season. All of the New England specimens which I have seen are decidedly smaller in size than those from the South.

PROCEEDINGS OF THE CAMBRIDGE ENTOMOLOGICAL CLUB.

At the meeting November 9th, Mr. L. R. Reynolds spoke of his insect collecting around the City of Mexico, where he spent the last winter. Many of the insects were similar to those of Arizona and southern California, but with them were others of more tropical kinds, as the Heliconid butterflies, which came in large numbers to the garden flowers. Many flying insects were caught in the evening by holding a fine net from a moving street-car. A large beetle larva from cactus is sold in the markets for food. Mr. Reynolds met several local entomologists and visited the collection at the National Museum.

Mr. C. W. Johnson told of a visit last summer to Mt. Desert on the coast of Maine, where he took part in the preparation of a catalogue of the animals of the island. Thus far about 1,400 species of insects have been found at Mt. Desert.

At the meeting of December 14th, Prof. C. T. Brues read a paper on microörganisms living within the bodies of Coccidæ, on which he and Dr. Glaser have lately made some new observations. Some can be cultivated in suitable media outside the body of the insect. Experiments suggest that the growth of these plants modifies the fluids around them in such a way as to promote the digestion of plant juices eaten by the insect and to aid in the rapid changes which take place during the growth of the eggs.

Mr. J. H. Emerton spoke of the unusually small amount of flying of spiders during the autumn just passed, although there was much pleasant weather.

Mr. L. R. Reynolds demonstrated a method which he uses for mounting small Coleoptera between two pieces of thin glass.

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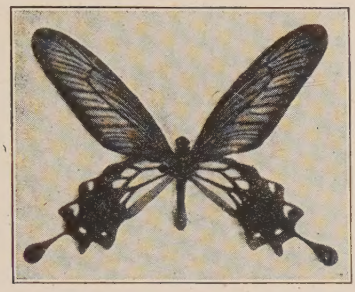

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